Research Office
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Research Project Title

Rating and Inventory of TDOT Retaining Walls

Purpose of the Project

The purpose of the project is to develop a comprehensive inventory, rating and prediction (IRP) system for retaining wall assets management in Tennessee. The state-of-art Unmanned Aerial Vehicle (UAV) based thermal sensing technology will be used as an auxiliary tool during field inspection. The system will integrate the advantages of existing systems, but develop a more objective rating procedure, providing additional dynamic forecasts on service life, risk analysis and action cost. All these extra components enable the established IRP to be more beneficial for efficient planning, designing, constructing, maintaining and managing of retaining wall systems in the state of Tennessee.

Scope and Significance

The scope of the research project includes:

- Surveying the typical parameters, models and procedures for the inventory of retaining walls
- Developing a novel condition rating system based on the key characteristics of wall systems
- Deriving the Analytical Hierarchical Process method for objective weighting
- Predicting the remaining service life of retaining walls using simulation technology
- Dynamic mapping of condition deterioration and action costs
- Compiling inventory and rating databases

Expected Outcomes

The following are expected outcomes of this research project:

- Assist TDOT in better understanding the spatial distribution and current condition of retaining walls.
- Dynamic condition prediction, service life estimate, and risk analysis will be objectively performed to assist TDOT in preventing catastrophic failures. Action cost analysis can be beneficial for accurate budgeting and allocation of available funds.
- With the deliverables, TDOT can better manage retaining wall structures in terms of maintenance, repairing and replacement through well-informed decisions within a tight budget.

Time Period

The time period for the project is 5/1/2019-11/30/2020.

Contact Information

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